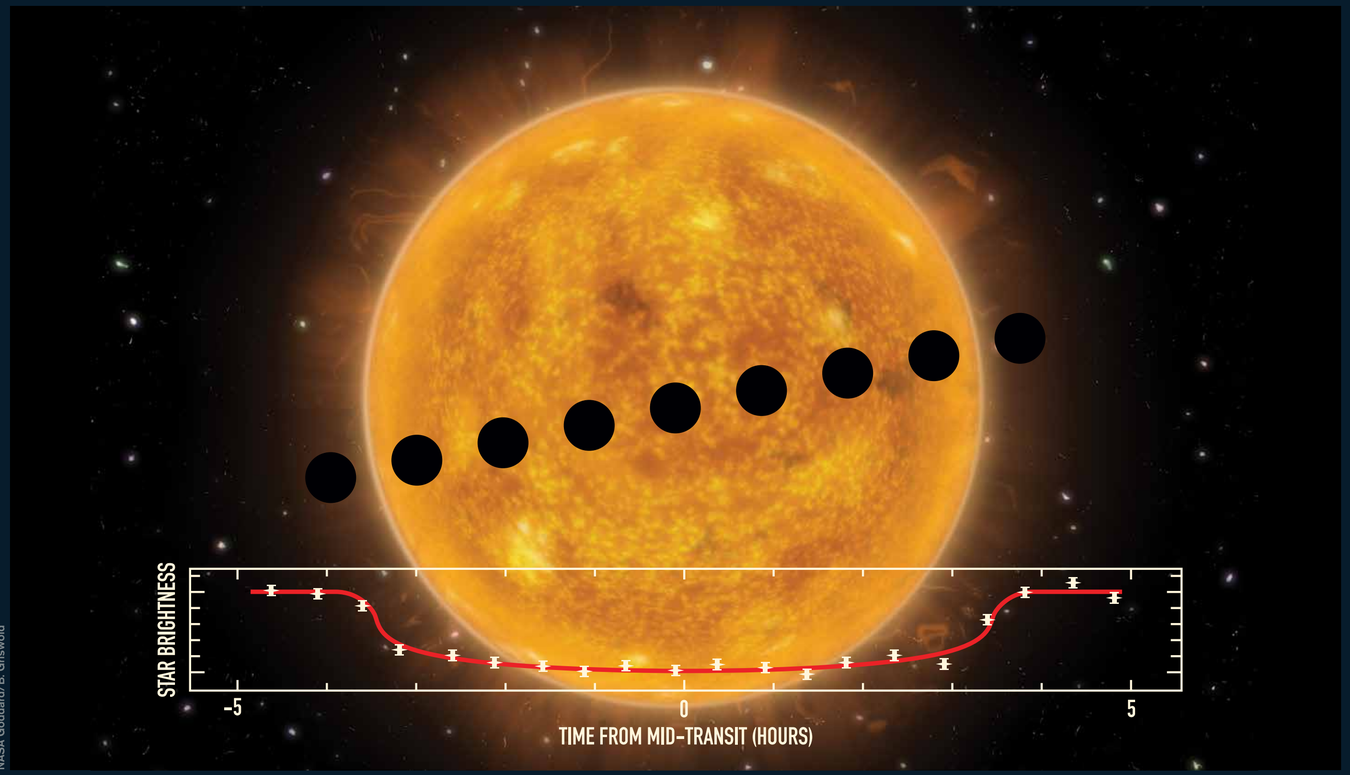
STATION 10 Goddard Initiatives

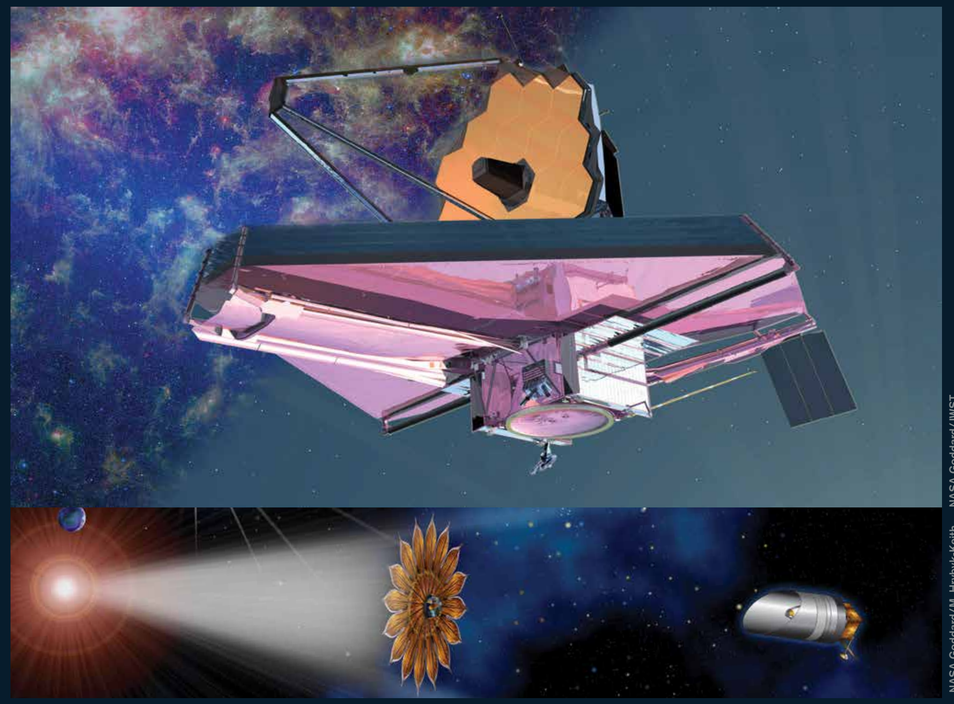
Exploring Exoplanet Atmospheres

The transit method is a highly productive strategy for discovering and characterizing exoplanets. When an exoplanet "transits," or passes in front of its star, it blocks a fraction of the star's light and causes a dip in brightness. Since larger planets block more light, the size of the dip gives the size of the planet. Transits can also be used to probe planetary atmospheres by searching for evidence of gases such as water and methane. Scientists at Goddard are using transits to determine the size, structure and composition of these distant worlds.



NASA Goddard/B. Griswold

PLANETARY TRANSITS: The red curve shows a dip in a star's brightness as a planet passes in front during transit. The amount of light blocked reveals the size of the planet. Other studies reveal its mass, density and temperature, for comparison with planets in our Solar System.



NASA Goddard/IWST

NASA Goddard/M. Hrybyk-Keith

FUTURE EXOPLANET MISSIONS: Goddard scientists and engineers develop telescopes for exoplanet science. Top: NASA's James Webb Space Telescope, now being built. Bottom: Notional telescope and starshade for imaging Earth-sized planets in the habitable zones of nearby stars.

DID YOU KNOW?

Most exoplanets are too distant to see in pictures taken with present telescopes, but scientists study their sizes, compositions and atmospheres using other methods.